Fluoroquinolone-resistant Neisseria gonorrhoeae (QRNG)
Frequently Asked Questions

1. **What are the QRNG trends outside of Hawaii and California?**
   - Antimicrobial resistance remains a key consideration in the treatment and control of gonorrhea.
   - QRNG continues to be endemic in Hawaii and California. Increases in QRNG are being seen in a number of new places (i.e., Washington State, Massachusetts).
   - Widespread and significant increases in QRNG have been noted among men who have sex with men (MSM) – and has increased to the extent that clinicians, in the absence of antimicrobial susceptibility testing or tests of cure, should no longer use fluoroquinolones for treating GC in this population.
   - Because prevalence does not appear to be high among heterosexual populations, broad-based change in treatment among heterosexuals is not suggested at this time.
   - There is a need to be watchful for increases among heterosexuals. There may be some local areas where treatment changes are currently warranted.
   - The fluoroquinolones remain widely useful drugs for treating GC in most of the U.S. population because they are inexpensive, easy to administer, and their continued use may decrease the use of cephalosporins and delay the development of cephalosporin resistance.

2. **Are there any special populations that have higher rates of QRNG?**
   Populations that appear to have higher rates of QRNG include patients who have acquired gonorrhea in Asia or the Pacific Islands, Hawaii, and California or who have sex partners who acquired their gonorrhea in those locations. Most importantly, we see that prevalence is high among MSM. Data about prevalence among women are quite limited.

3. **Why is prevalence higher in MSM vs. heterosexuals?**
   Sexual behavior and networks are different for the two populations. This is consistent with the fact that across the country syphilis is decreasing among heterosexuals but increasing among MSM.

4. **At what QRNG prevalence should fluoroquinolones no longer be used to treat GC?**
   In general, antibiotics that are recommended for the treatment of GC in the 2002 CDC STD Treatment Guidelines are selected based on evidence that they are 95% effective in treating gonorrhea. A fluoroquinolone resistance level of 5% for Neisseria gonorrhoeae would suggest that fluoroquinolone use for gonorrhea treatment is inappropriate. However, there may be circumstances when it is appropriate to make such a decision even though QRNG prevalence is under or over 5%. CDC is working on more direct and helpful guidance for the STD programs.

5. **How can health departments or providers determine local QRNG prevalence?**
   - It is not easy to estimate local prevalence – a given set of isolates may not truly reflect what is going on in the community. There is no easy answer; however, additional guidance will be forthcoming.
   - In terms of assessing the prevalence of QRNG in a set of isolates, this requires culture and transport to an appropriate lab to be the antibiotic sensitivity testing. CDC can help with this last component.

6. **As a result of the new increases in QRNG, how should clinicians mange patients they suspect of having GC?**
   - Clinicians should be aware of local health department recommendations. (The Gonococcal Isolate Surveillance Project {GISP} Website **http://www.cdc.gov/std/GISP** has identified those areas that have made local recommendations about treatment of GC, with regard to QRNG prevalence).
   - Since prevalence appears particularly high among MSM, clinicians should ask males with GC about gender of sexual partners.
   - Clinicians should ask patients about the patient's and his/her partner's travel history.
   - Clinicians should be prepared to evaluate treatment failures by culture.

7. **As a result of the new increases in QRNG, what should health departments do?**
   - Because data are limited, health departments should consider determining QRNG prevalence among heterosexuals—especially women. However, CDC recognizes the challenges in such a determination.
   - Health departments could facilitate antibiotic susceptibility testing of GC isolates (if GC culture is being used!). CCD can assist with antibiotic suspceptibility testing of GC isolates (which involves identification of appropriate laboratories).
   - CDC is exploring the availability of cefixime. Currently the oral suspension (100mg/5mL) is available but the 400mg tablets are not. More information will be forthcoming.

8. **The MMWR says that "Arrangements for antimicrobial susceptibility testing can be made by contacting state and local health departments." How should state and local health departments facilitate this process?**
   State and local health departments that are not able to conduct reference susceptibility testing should contact the CDC GISP Coordinator in the Division of STD Prevention (404-639-2059) who will provide information on submitting the isolates to a GISP Regional Laboratory or the CDC GC laboratory**.**

9. **What should project areas that are not doing susceptibility testing and have no resistance data do about their GC treatment recommendations?**
   Ideally, recommendations should be made on the basis of local prevalence data. In the absence of any testing information, national data may be all that is available.

10. **Rather than perform susceptibility testing and resistance surveillance, can one simply monitor gonorrhea treatment failures?**
    That is not an adequate substitute for monitoring QRNG prevalence.

11. **Our site only performs non-culture tests for GC (e.g., Pace 2 or NAAT). Can these tests be used to check for resistance?**
    No. At this time, susceptibility testing can only be performed on living Neisseria Gonorrhoeae grown in culture.

12. **Where can GC cultures be processed? Is there any special equipment to perform culture?**
    - Transport medium must be available wherever GC testing is performed so that specimens from individuals with suspected treatment failure can be sent to the laboratory for culture.
    - Many (if not most commercial) laboratories can perform culture if requested (should check in advance with the lab).

13. What are the antimicrobials that should routinely be susceptibility tested against?
Laboratories that perform susceptibility testing of N. gonorrhoeae may use E-test or disk diffusion methodology. Susceptibility testing should include the antimicrobials being used in the community to treat gonorrhea. Routinely, this will mean including at least two drugs: one fluoroquinolone (ciprofloxacin, ofloxacin or levofloxacin) and ceftriaxone, but it may also mean including spectinomycin, azithromycin, and cefpodoxime or any other drug being used for GC treatment.

14. Will CDC expand GISP to include areas not currently covered?
GISP may be expanded to address regional gaps in the sentinel surveillance system, but it will not be possible for GISP to include every locality. It will not be possible for GISP to substitute for local susceptibility testing throughout the U.S.

15. What alternatives are available for GC treatment if FQ is not used? Can cefpodoxime, cefuroxime, cefdinir, ceftibuten, azithromycin be used?
- CDC recommended cefixime and ceftriaxone.
- None of these last five has been recommended by CDC-either because of questions about effectiveness or because of possible side effects (azithromycin). If any of these are used, we recommend that a test of cure be performed, local treatment recommendations not withstanding.
- Lupin Limited (Baltimore, MD) recently received FDA approval to manufacture and market cefixime 400 mg tabs. It is not clear when the tablets will be available.

16. What are the options to treat patients with cephalosporin allergy?
Spectinomycin 2 gm IM or azithromycin 2 gm PO. However, spectinomycin should not be used to treat patients with pharyngeal GC since spectinomycin is not sufficiently effective for GC infections at that site.

17. What are the options to treat patients with pharyngeal GC?
Ceftriaxone 125 mg IM.

18. Has resistance to cephalosporins and spectinomycin been identified?
Spectinomycin resistant N. gonorrhoeae have been identified only sporadically for many years throughout the world. N. gonorrhoeae with decreased susceptibility to cefixime have been identified sporadically since 1992. Several isolates resistant to penicillin, tetracycline, and ciprofloxacin, and with decreased susceptibility to cefixime were identified in Hawaii in 2001. There have been no cases reported of decreased susceptibility to ceftriaxone in the United States.

19. What are the ramifications of QRNG?
The options for treatment are essentially limited to the cephalosporins.